

been amended at page 4 to recite the plant height in specific quantitative terms. At page 6, the term "Sepals" has been changed to 'Phyllaries' and the section entitled Reproductive Organs at page 8 has been amended as suggested by the Examiner to clarify the disclosure in terms of the observed gynoecium and androecium. In addition, at page 9, the specification has been amended to indicate that the characteristics of pollen, fruit and seeds for the instant plant have not been observed.

Typographical errors, non-substantive corrections and spacing in the specification have been amended at pages 2, 3, 4, 5 and 6. There are no amendments to the claim or Abstract.

The above amendments to the specification have addressed the Examiner's objections to the disclosure under 37 C.F.R. §1.63 and under 35 U.S.C. § 112, first paragraph. It is respectfully submitted that those objections are now overcome. As a consequence, the basis for the Examiner's rejection under 35 U.S.C. § 112, first and second paragraphs, is no longer present and it is respectfully requested that the rejection on this basis be withdrawn.

## **II. The Section 102(b) Rejection**

Claim 1 further stands rejected under 35 U.S.C. § 102, because it appears to the Examiner that the instant plant may have been available in the public domain and may have been the subject of a printed publication prior to the U.S. application filing date. Although the Examiner does not explicitly state the basis for the rejection, the claim is apparently rejected under § 102(b) as anticipated by a "published application, proposed denomination or granted PBR certificate combined with knowledge in the prior art," that would enable one of ordinary skill in the art to reproduce the claimed plant. The Examiner has requested information under 37 C.F.R. § 1.105 to determine when, if ever, the claimed plant variety, 'Vulcan Time,' was publicly

available prior to the U.S. filing date of this application.<sup>1</sup>

**A. Published Citations to the Community Plant Variety Rights Application**

The instant variety, 'Vulcan Time,' is the subject of a pending application for Community Plant Variety Rights ("CPVR") that was filed in the European Community Plant Variety Office ("CPVO") more than a year prior to the filing date of this U.S. application. (See the Applicant's accompanying Response to Requirement for Information under 37 C.F.R. § 1.105.) Contrary, however, to the Examiner's apparent assumption regarding the publication of CPVR applications, the CPVO has informed Applicant's attorney that CPVR applications are not published and not accessible to the general public. Instead of publishing CPVR applications, the CPVO publishes only a citation to a new CPVR application in the Official CPVO Gazette at the time the application is filed. A copy of the Official Gazette citation for the CPVR application for the variety that is the subject of this U.S. plant patent application was disclosed in Applicant's Supplemental Information Disclosure Statement filed June 17, 2002. As a matter of convenience for the Examiner, a further copy has also been included with Applicant's Response to the § 1.105 Requirement for Information.<sup>2</sup>

As can be seen from the Official Gazette citation for the instant CPVR application, information regarding new CPVR applications is published in a table format with explanatory headings in numerous different languages, including English. In this particular case, the table of information begins on the page numbered "1/99/13" in the upper right hand corner of the CPVO Gazette page. There are three columns of information listed in the table and an explanation of

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<sup>1</sup> At page 5 of the Office Action, the Examiner mistakenly refers to the cultivar name used in the instant application as 'Festival Time Improved'. Applicant assumes the Examiner intended to refer to the cultivar denomination 'Vulcan Time' as designated in the instant application.

<sup>2</sup> The citation from the Official CPVO Gazette is enclosed as item number 8 on the PTO Form 1449 accompanying the Applicant's Response to the § 1.105 Requirement for Information.

the entry in each column is shown at the top of the table. (For example, column 1, item a is the "File number"; column 1, item b is the "Date of application," etc.) The information in the table is grouped alphabetically by plant variety, e.g., Aster L., Avena sativa L., etc.

The citation for the CPVR application for the variety that is the subject of this U.S. application is shown in the lower right hand corner of page 1/99/14 of the Official CPVO Gazette. Only six pieces of information regarding the instant plant variety are disclosed in the CPVO Gazette citation: the plant variety ("Chrysanthemum"); the file number for the CPVR application ("98/1621"); the filing date of the CPVR application ("21/12/1998" or December 21, 1998); a code number for the Applicant ("00301"); a similar code number for the Breeder ("00301"); and a provisional designation for the variety ("*p106/98*"). The cultivar denomination 'Vulcan Time' was not proposed at the time the CPVR application was filed and is not disclosed in the Official Gazette citation.<sup>3</sup> No further information regarding the CPVR application is disclosed in the Official Gazette citation.

Similar information regarding the CPVR application is disclosed on the CPVO web site.<sup>4</sup> The web site listing includes a caveat from the CPVO that the web site is merely a means to improve the dissemination of information on CPVR applications and that the information contained on the web site does not have any official status under the legislation governing the

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<sup>3</sup> The cultivar denomination 'Vulcan Time' was not proposed in the CPVR application until May 6, 2002 and not officially published by the CPVO until December 15, 2002, which is well after the U.S. application filing date. See Applicant's Response to the § 1.105 Requirement for Information.

<sup>4</sup> A copy of the CPVO web site citation for the instant variety was disclosed in Applicant's Supplemental Information Disclosure Statement filed June 17, 2002. As a matter of convenience for the Examiner, a further updated copy has been included with the Applicant's Response to the § 1.105 Requirement for Information. The citation from the CPVO web site is enclosed as item

CPVO. The web site is updated periodically and consequently now includes the cultivar denomination 'Vulcan Time,' which was not proposed in the CPVR application until after the filing date of the instant U.S. plant patent application. (See Applicant's Response to the § 1.105 Requirement for Information.) The CPVO has informed Applicant's attorney that information is generally posted to the CPVO web site at approximately the same time it is officially published in the CPVO Gazette.

The same information shown in the CPVO Gazette citation is also reflected in the UPOV-ROM GTITM Computer Database citation for the variety that is the subject of this U.S. application. Applicant has enclosed a copy of the UPOV-ROM Computer Database citation for the instant variety from the 2002/01 version of the UPOV-ROM Database in the Applicant's Response to the § 1.105 Requirement for Information.<sup>5</sup> The cultivar denomination 'Vulcan Time' is not shown in the UPOV-ROM Database 2002/01 citation because the denomination was not proposed until May 2002 and not published until December 2002. (See Applicant's Response to the § 1.105 Requirement for Information.)

**B. Sale of the Variety 'Vulcan Time' outside the United States**

The variety that is the subject of this U.S. plant patent application has been sold and offered for sale under the cultivar denomination 'Vulcan Time' outside the United States for more than one year prior to the U.S. application filing date. (See Applicant's Response to the § 1.105 Requirement for Information.) The variety has been offered for sale in successive Ficor

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number 9 on the PTO Form 1449 accompanying the Applicant's Response to the § 1.105 Requirement for Information.

<sup>5</sup> The UPOV-ROM Computer Database citation is enclosed as item number 10 on the PTO Form 1449 accompanying the Applicant's Response to the § 1.105 Requirement for Information. The UPOV-ROM Database 2002/01 has been updated but the updated Database is not available to the Applicant.

catalogs since October 1997, however, the first actual sale of the variety 'Vulcan Time' occurred in the United Kingdom on March 28, 1998. Copies of the Ficor catalogs have been enclosed with the PTO Form 1449 accompanying Applicant's Response to the § 1.105 Requirement for Information. Applicant is not aware of any sale or public distribution of the 'Vulcan Time' variety under any name or denomination other than 'Vulcan Time.'

The description regarding the 'Vulcan Time' variety disclosed in the Ficor catalogs is not substantially greater than the information disclosed in the Official CPVO Gazette citation for the corresponding CPVR application. For example, in the 1998 Ficor catalog, 'Vulcan Time' first appears as a new variety in an alphabetical listing at page 3 of the catalog and then at page 13 under the "Pot Varieties" listed in a small table entitled "Bronze Red Single." The catalog table is largely devoid of any substantive description of the variety that would distinguish it from the other "Bronze Red Single" varieties listed in the table. A column entitled "Notes" contains a subjective and cryptic evaluation of the variety as "Most floriferous red single which holds its colour. Excellent habit, very good shelf life." For other varieties listed in the table, the Notes column contains similar comments, for example, "[v]ery dark red single with good compact habit," and "[b]lood red single, holds colour well in high light, good foliage and habit." There are no pictures of the variety in the catalog and no other disclosure directed at distinguishing characteristics, or comparisons and contrasts with other varieties. The entries in the Ficor catalogs for the other years 1999-2001 are substantially identical.

To the Applicant's knowledge, the instant plant variety has not been sold, offered for sale or otherwise been made publicly available in the United States more than a year prior to the filing date of this U.S. application.

**C. The published CPVO Citation is not effective prior art for anticipation**

Anticipation by a reference occurs where the reference adequately describes the invention in question to a person of ordinary skill in the art to which the invention pertains and the reference qualifies as a printed publication. *See, e.g., In re Paulsen*, 30 F.3d 1475, 1478 (Fed. Cir. 1994) (“the reference must be enabling and describe the applicant’s claimed invention sufficiently to have placed it in possession of a person of ordinary skill in the field of the invention”). The description must enable such a person not only to comprehend the invention but also to make it. *Paperless Accounting, Inc. v. Bay Area Rapid Transit Sys.*, 804 F.2d 659, 665 (Fed. Cir. 1986) (“[A] § 102(b) reference ‘must sufficiently describe the claimed invention to have placed the public in possession of it.’ . . . “[E]ven if the claimed invention is disclosed in a printed publication, that disclosure will not suffice as prior art if it was not enabling.” . . . The basis for this rule is found in the description requirement of § 102(b).”)

In this application for the ‘Vulcan Time’ variety, the citation to the CPVR application published in the Official CPVO Gazette is insufficient to place a person of ordinary skill in the art in possession of the claimed variety. The published citation clearly lacks enablement, but even setting aside the question of enablement, the citation to the CPVR application for the instant variety is simply too factually deficient to adequately describe the claimed variety. The citation does not contain the denomination ‘Vulcan Time’ and recites no characteristics beyond the provisional designation “p106/98” that could be used to distinguish the variety from any other Chrysanthemum variety listed in the Official Gazette. Not even the flower color of the variety is disclosed. The six bare pieces of information contained in the disclosure in the CPVR citation are simply too sparse to constitute an adequate description of the claimed variety and to place the variety in the possession of one of ordinary skill in the art. As a consequence, the published

CPVR citation cannot form the basis of a § 102(b) anticipation rejection – there is too much description missing from the citation.

**D. The CPVR Citation cannot be combined with extrinsic evidence to show anticipation**

For anticipation, a reference must disclose all elements of the claimed invention within the four corners of the reference. *Advanced Display Systems Inc. v. Kent State University*, 212 F.3d 1272, 1282 (Fed. Cir. 2000), *cert. denied*, 532 U.S. 904 (2001) (“invalidity by anticipation requires that the four corners of a single, prior art document describe every element of the claimed invention, either expressly or inherently, such that a person of ordinary skill in the art could practice the invention without undue experimentation.”) Anticipation cannot be found by combining more than one reference to show the elements of the claimed invention. *In re Saunders*, 444 F.2d 599, 602-03 (CCPA 1971) (“[T]wo references together simply cannot constitute an ‘anticipation’ in the technical sense of that term in patent law.”); *Studiengesellschaft Kohle, m.b.H. v. Dart Indus., Inc.*, 726 F.2d 724, 726-27 (Fed. Cir. 1984) (“It is hornbook law that anticipation must be found in a single reference, device or process.”) Each case is considered on its own facts. *In re LeGrice*, 301 F.2d 927, (CCPA 1962) (“Each case must be decided on its own particular facts in determining whether, in fact, the description in the printed publication is adequate to put the public in possession of the invention and thus bar patentability of a plant under the condition stated in Section 102(b)”).

Although all elements of the claimed invention must be shown in a single reference, the Federal Circuit has noted that “it is sometimes appropriate to consider extrinsic evidence to explain the disclosure of a reference.” *Scripps Clinic & Research Foundation v. Genetech, Inc.*, 927 F.2d 1565, 1576 (Fed. Cir. 1991). *See also In re Samour*, 571 F.2d 559 (CCPA 1978) (a primary reference disclosing all the elements of a chemical compound anticipates a later claim

for that compound even though a method of making the compound is disclosed only in a secondary reference). In *Scripps*, however, the Federal Circuit went on to warn that the use of such extrinsic evidence is narrowly proscribed.

Such factual elaboration is necessarily of limited scope and probative value, for a finding of anticipation requires that all aspects of the claimed invention were already described in a single reference: a finding that is not supportable if it is necessary to prove facts beyond those disclosed in the reference in order to meet the claim limitations. The role of extrinsic evidence is to educate the decision-maker to what the reference meant to persons of ordinary skill in the field of the invention, not to fill gaps in the reference. . . . If it is necessary to reach beyond the boundaries of a single reference to provide missing disclosure of the claimed invention, the proper ground is not § 102 anticipation but § 103 obviousness. *Scripps*, 927 F.2d 1565, 1576-77 (Fed. Cir. 1991) (citations omitted).

In the context of plant patents, the CCPA specifically discussed the permissibility of combining the description of a plant in a printed publication with extrinsic evidence to achieve the invention on which a patent is sought.

[T]he proper test of a description in a publication as a bar to a patent as the clause is used in Section 102(b) requires a determination of whether one skilled in the art to which the invention pertains could take the description of the invention in the printed publication and combine it with his own knowledge of the particular art and from this combination be put in possession of the invention on which a patent is sought. Unless this condition prevails, the description in the printed publication is inadequate as a statutory bar to patentability under section 102(b). *In re LeGrice*, 301 F.2d 929, 939 (CCPA 1962).

The court went on to state that “[t]he mere description of the plant is not necessarily an ‘enabling’ disclosure. Such descriptions, just as in the case of other types of inventions, in order to bar the issuance of a patent, must be capable, when taken in conjunction with the knowledge of those skilled in the art to which they pertain, of placing the invention in the possession of those so skilled.” *Id.* at 944. *See also Ex Parte Thomson*, 24 USPQ2d 1618, 1620 (Bd. Pat. App. & Int’f 1992) (“[T]he applied [§ 102(b)] rejection does not rely upon or incorporate the public use or on sale bar of the statute. . . . [T]he material disclosed in each [publication], when



considered in conjunction with the knowledge of the skilled cotton grower, would have enabled such a skilled artisan to make the claimed Siokra cultivar, along with its seeds, plants, pollen, etc., by purchase and planting of the requisite seeds.”)

Even so, such “[e]xtrinsic evidence may be considered when it is used to explain but not to expand, the meaning of a reference.” *In re Baxter Travenol Labs*, 952 F.2d 388, 390 (Fed. Cir. 1991). Moreover, it is not permissible to incorporate specific teachings of a second reference into an allegedly anticipating reference. *See In re Marshall*, 578 F.2d 301, 304 (CCPA 1978) (“[T]o constitute an anticipation, all material elements recited in a claim must be found in one unit of prior art. . . . This basic principal of patent law has not been disturbed by our recent decision, *In re Samour* . . . in which we affirmed a § 102(b) rejection of claims to a chemical compound based on a primary reference which disclosed the compound and additional references which established that a method of preparing the compound would have been obvious to one skilled in the art. In *Samour*, every material element of the claimed subject matter, the chemical compound, could be found in the primary reference, a disclosure of the compound.”) *See also Al-Site Corp. v. Opti-Ray Inc.*, 28 USPQ2d 1915, 1921 (E.D. N.Y. 1993) (“it is inappropriate for the fact-finder to go beyond the features of a prior art reference in order to find that that reference anticipated the patented invention.”)

In this application, the Examiner has rejected the claim over the combination of a published citation for a CPVR application with extrinsic evidence of public availability of the claimed variety through a sale outside the United States. Under closer scrutiny, it is apparent that this combination cannot be maintained. First, as discussed above, the disclosure of the CPVR citation is simply too deficient to provide an adequate description of the claimed variety sufficient to place the variety in the possession of one of ordinary skill in the art. *Ex Parte*

*Thomson* and *In re LeGrice* are inapposite here and are readily distinguished on their facts.

In *LeGrice*, the CCPA held that a description and photograph of a hybrid rose in a publication did not constitute an adequate description of that rose such as would bar a plant patent. The photograph did not and could not enable one with skill in the art to make the rose. In *Ex Parte Thompson*, the Board of Patent Appeals distinguished *LeGrice* and found anticipation by publications describing a Siokra cotton cultivar, even though the publications did not describe the inventor's breeding process. The publications indicated that seeds for the cotton cultivar were widely available outside the U.S.

In both *Thomson* and in *LeGrice*, the printed publication at issue described the claimed plant in sufficient detail to distinguish the variety from all others and place the claimed plant in the possession of a person of ordinary skill but for one issue: enablement to make the plant. There was no dispute regarding the sufficiency of the description of the plant variety except as to enablement. In *Thomson*, there was extrinsic evidence regarding enablement; in *LeGrice* there was not, hence the outcome in each case was different.

It is clearly not the same circumstance in this case. The alleged printed publication in the instant case, the published CPVR citation, is factually insufficient to comprise an adequate description of the claimed plant even if the lack of enablement is ignored. The citation does not in itself contain sufficient disclosure to distinguish the variety from any others. The Examiner is not using the evidence of public availability to show the state of knowledge in the prior art. It is rather being used to fill a multitude of gaps in the description of the invention and expand that description far beyond what it rightfully discloses absent the combination. This is improper. It is not permissible to use extrinsic evidence to incorporate missing description of the variety and complete an otherwise inadequate disclosure. Thus, in this instance, the printed publication

relied upon by the Examiner is not effective prior art and cannot be expanded by combination with evidence of public availability.

Second, as a factual matter, there is simply insufficient disclosure in the published citation for the CPVR application to permit a person of ordinary skill in the art to combine the citation with the evidence of foreign sales of the claimed variety. The published citation for the CPVR application admits of only the provisional designation *p106/98* and not the cultivar denomination ‘Vulcan Time.’ The evidence of public availability of the claimed variety shows that the variety was sold only under the cultivar denomination ‘Vulcan Time’ and not under the provisional designation *p106/98*. A person of ordinary skill in the art could not have recognized a connection between the CPVR citation for the variety “*p106/98*” and the commercial variety named ‘Vulcan Time’ which was offered for sale. This disconnect prevents any viable combination between the two. Hence the evidence of public availability of the variety cannot be used to relieve the inadequate disclosure or lack of enablement of the published citation for the CPVR application because it was factually impossible to make the combination. Under these circumstances, the Section 102(b) rejection manifestly cannot stand.

**E. The additional CPVR publications and Ficor catalogs do not cure the defects of the Official CPVO Gazette citation**

As discussed above, the other CPVR citations shown on the CPVO web site and in the UPOV-ROM Database do not add significant additional description to the disclosure of the CPVR citation published in the Official CPVO Gazette. Nor does the disclosure of the Ficor catalogs, since it can hardly be argued that the addition of a “[m]ost floriferous red single” to the plant variety description does anything to cure the fatal defects of the Official CPVO Gazette citation. Moreover, these references still suffer from the same lack of enablement as the Official Gazette citation.

Again setting aside the enablement issue, the disclosures in these additional published citations and catalog listings are inadequate to place the claimed variety in the possession of a person of ordinary skill and insufficient to distinguish the described variety from other Chrysanthemum varieties. Extrinsic evidence in the form of the "knowledge of the art" cannot be used to expand the wholly deficient disclosures of the claimed plant variety and augment the too sparse plant descriptions. Such augmentation would be contrary to the Section 102(b) statute and contrary to the case law on Section 102(b) discussed above.

The public availability of the claimed variety for sale outside the U.S. cannot be incorporated to supply the missing parts of the plant description in the references of record in order to constitute a Section 102(b) rejection for anticipation. It is apparent that such a rejection cannot be maintained and should be withdrawn by the Examiner. The Applicant respectfully requests that the Examiner reconsider her intention to reject this application under 35 USC § 102(b).

### **III. Conclusion**

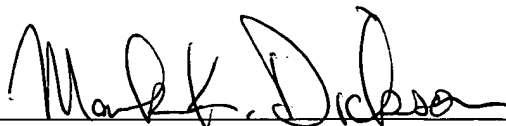
It is respectfully submitted that the Examiner's rejections under 35 U.S.C. §§ 112 and 102 have been overcome as lacking in basis and should be withdrawn. There are no further rejections or objections to the disclosure or the claim and the application is now believed to be in condition for allowance.

No additional fees are believed to be due, however, the U.S. Patent and Trademark Office is hereby authorized to charge any fee deficiency, or credit any overpayment, to Deposit Account No. 08-3038 referencing docket number 10451.0016.NPUS00.

The Examiner is invited to contact the undersigned attorney at (650) 463-8100 regarding any further questions, comments or suggestions relating to this patent application..

Respectfully submitted,

Date: April 1, 2003

  
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part # 9

**RED-LINED VERSION (AS AMENDED 3/19/03)**  
**(TWICE AMENDED) PLANT PATENT**  
**[File No. 10451.0016.NPUS00]**

**APPLICATION FOR UNITED STATES PLANT PATENT**

**for**

**CHRYSANTHEMUM PLANT NAMED 'VULCAN TIME'**

**by**

**Mark Roland Boeder, Courts Haugh, Rookwood Lane, West Wittering, PO20 8QH,  
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\_\_\_\_\_  
Beverly A. Lee

## LATIN NAME OF THE GENUS AND SPECIES

Botanical classification: *Dendranthema grandiflora*.

## VARIETY DENOMINATION

The new Chrysanthemum variety denomination is 'Vulcan Time.'

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## BACKGROUND OF THE INVENTION

The present invention comprises a new and distinct cultivar of Chrysanthemum botanically known as *Dendranthema grandiflora*, and referred to by the cultivar name 'Vulcan Time.'

'Vulcan Time', identified as 20247-0, originated from a cross made by Mark R. Boeder in a controlled breeding program at Chichester, West Sussex, United Kingdom. The female parent of the new variety is an undistributed, unpatented seedling identified as P551B2 and the male parent is the undistributed, unpatented seedling identified as P341B7. The new variety 'Vulcan Time' has been asexually reproduced by vegetative cuttings at Chichester, West Sussex, United Kingdom and the distinguishing characteristics are retained through successive generations of asexual reproduction.

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## BRIEF SUMMARY OF THE INVENTION

'Vulcan Time' is a pot type of Chrysanthemum plant, having a flat capitulum form and red single type flowers.

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## Comparison with Parent

Plants of the new Chrysanthemum variety 'Vulcan Time' are similar to the parent seedling P341B7 in plant habitat and growth rate. In side-by-side comparisons at Chichester, West Sussex, United Kingdom, under commercial practice, plants of the new Chrysanthemum variety 'Vulcan Time' differed from plants of the parent seedling P341B7 in the following characteristics.

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1. The new variety 'Vulcan Time' produces paler red flowers whereas the parent seedling P341B7 produces dark red flowers.

2. Plants of the new variety 'Vulcan Time' have a faster response time than plants of the parent seedling P341B7.
3. Plants of the new variety 'Vulcan Time' have paler green foliage than plants of the parent seedling P341B7.

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#### Comparison with Other Varieties

Plants of the new Chrysanthemum variety 'Vulcan Time' are similar to the cultivar 'Rage' (U.S. Plant Patent No. 8,770) in plant habitat and growth rate. However, in side-by-side comparisons at Chichester, West Sussex, United Kingdom, under commercial practice, plants of the new Chrysanthemum variety 'Vulcan Time' differed from plants of the cultivar 'Rage' in the following characteristics.

10

- ~~1~~1. Plants of the new variety 'Vulcan Time' have a faster response time than plants of the variety 'Rage.'

- ~~2~~2. Plants of the new variety 'Vulcan Time' have larger flowers than plants of the cultivar 'Rage.'

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#### BRIEF DESCRIPTION OF ILLUSTRATIONS

Figure 1 is a whole plant view of the new variety 'Vulcan Time' grown in a pot. The colors shown are as true as possible within the usual limits of this kind of illustration. The plant shown in the illustration is 60 days from the start of Short Days.

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#### DETAILED BOTANICAL DESCRIPTION

The following description of the new Chrysanthemum variety 'Vulcan Time' is of plants grown a greenhouse at Chichester, West Sussex, United Kingdom in the month of June. The cultivar has not been observed under all possible environmental conditions. The phenotype may vary significantly with variations in the environment such as temperature, length of day and light intensity, without any variance in genotype. The commercial classification of the new variety is a pot Chrysanthemum.

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Plants of the new variety have been grown successfully under temperature conditions averaging about 18°C at night and about 24°C to 25°C during the day under light conditions of about 5,000 to 6,000 foot candles. The plants respond well to the use of growth retardant, such as three B9 treatments at about 2500 ppm. To produce a commercial product the plants may be pinched once. The typical container size for commercial growth is 14 cm. It has been observed that the shelf life of the new variety is about 21 days with a response time of about 8 weeks. The new variety is suitable for growth in a temperature range of 15°C to 25°C.

The following description is with respect to a plant produced as a pot Chrysanthemum. In the description of this new Chrysanthemum variety, color values have been taken from the Royal Horticultural Society Colour Chart (R.H.S.C.C.).

#### Plant

Plant type: pot

Habit: upright and branching

Height: ~~medium~~ 26 cm

Width: 32 cm

Branching characteristics (describe): free and spreading

Length of Lateral Branches: 13-17 cm

Number of Breaks from Pinch: 4-6

Stem Color: near 137B

Response Time: near 56 days

Vigor: medium

Shelf Life: near 21 days

Disease (susceptibility or resistance ~~observed~~): ~~no observations~~ none observed

Pest (resistance or susceptibility): none observed

Growth retardant type and treatment: 3 applications of 2.5 gram/litre at 2 days, 21 days  
and 28 days after sticking of unrooted cuttings

The plants were grown for two weeks in Long Day conditions (20 hours of light) and  
then transferred to Short Day conditions (13 hours of dark).

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Propagation:

*Type:* vegetative propagation via stem cuttings

*Time to rooting:* 12-14 days with soil temperatures of 18°C

*Rooting habit:* fine and fibrous

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Foliage

Number of Leaves Per Lateral Branch: 9-12

Compound or single: single

Arrangement of Leaves: alternate

Shape of Leaf: typically 5 lobed, ovate

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Size of Leaf:            *Width* (cm): near 4-6       *Length* (cm): near 6-10

Leaf Apex: acute

Base: obtuse

Attachment: petioled

Aspect: slight undulating

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Margin: palmately lobed

Surface characteristics:       *Top:* slightly pubescent

*Bottom:* pubescent

Petiole:            *Color:* near 137B

*Length:* near 2.5 cm

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Venation-(describe): net, prominent midvein at under side

*Color: upper side: near 144B*

*under side: near 144B*

Color: Mature Leaf, *upper side: near 137B; under side: near 138B*

Young Leaf, *upper side: near 137A; under side: near 137C*

5 Flower

Flower type: single

Number of blossoms per branch: 3-5

Inflorescence form: pyramidal

Depth of fully expanded blossoms: near 2.0 cm

10 Diameter of fully expanded blossoms: 6-8 cm

~~Sepals~~ Phyllaries:

*Number: 20-25*

*Color: near 137B*

*Length: 0.7-1.2 cm*

15 *Width: 0.2-0.3 cm*

*Texture/Appearance: pubescent*

Pedicle length is more or less equal over all flowers and between 4.5 and 5.5 cm

20 *Length: 4.5-5.5 cm*

*Color: near 137B*

*Surface: pubescent*

*Habit: slightly undulating*

*Strength: medium*

25 Ray ~~F~~lorets:

*Form/Shape: straight*

*Texture/Appearance: matte*

*Number per flower: 35-45*

*Length: 3.5-4.5 cm; Width: 0.6-1.0 cm*

30 *Apex: rounded or dentate*

*Base: tapered*

*Margin: entire*

Disc florets:

- 5      *Form/Shape:* cylindrical  
         *Texture/Appearance:* shiny  
         *Number per flower:* 170-250  
         *Length:* near 0.4-0.6 cm; *Width:* <0.1 cm  
         *Diameter of disc:* 1.0-1.4 cm

Fragrance: faint

Flower Bud (at onset of color):

- 10      *Length:* near 0.8 cm  
         *Diameter:* near 1.1 cm  
         *Form/shape:* globular

General flower color:

1. Ray florets, *upper side*:  
*Immature*: near 46A  
*Mature*: near 45B  
5 *Older/Fading*: near 44B
2. Ray florets, *under side*:  
*Immature*: near 33C  
*Mature*: near 33C  
*Older/Fading*: near 33D
- 10 3. Disc florets:  
*Immature*: near 151B  
*Mature*: near 6A  
*Older/Fading*: near 6A
4. Bud: near 138B
- 15 Flower progression with age: Flowers fading from red to bronze/orange with age.

Reproductive Organs

~~Ray Florets: Pistillate~~

- ~~*Stigma color*: near 6C~~  
~~*Stigma shape*: forked~~  
20 ~~*Style Color*: near 6C~~  
~~*Style Length*: near 0.4 cm~~

~~Disc Florets: Pistillate~~

- ~~*Stigma color*: near 6C~~  
25 ~~*Stigma shape*: forked~~  
~~*Style Color*: near 6C~~  
~~*Style Length*: near 0.1 cm~~

- ~~*Staminate*:~~  
30 ~~*Stamen Number*: 5~~  
~~*Pollen Quantity*: none observed~~

~~*Pollen Color*: none observed~~

Gynoecium: Present on both Ray and Disc florets

- 35 *Pistil number on Ray florets*: 30  
*Pistil number on Disc florets*: 150

5      Stigma color: near 6C  
         Stigma shape: forked  
         Style color: near 6C  
         Style length on Ray florets: near 0.4 cm  
         Style length on Disc florets: near 0.1 cm

Androecium: Present on Disc florets only

10      Anther number: 135  
         Anther shape: clubbed  
         Anther color: near 150C  
         Pollen quantity: average  
         Pollen color: 14B

15      Fruit and Seeds: none observed

WHAT IS CLAIMED IS:

1. A new and distinct variety of Chrysanthemum plant, substantially as described and illustrated herein.

### ABSTRACT

A new variety of Chrysanthemum plant named 'Vulcan Time,' having red single type flowers, a slight domed capitulum form and an upright growth habit.